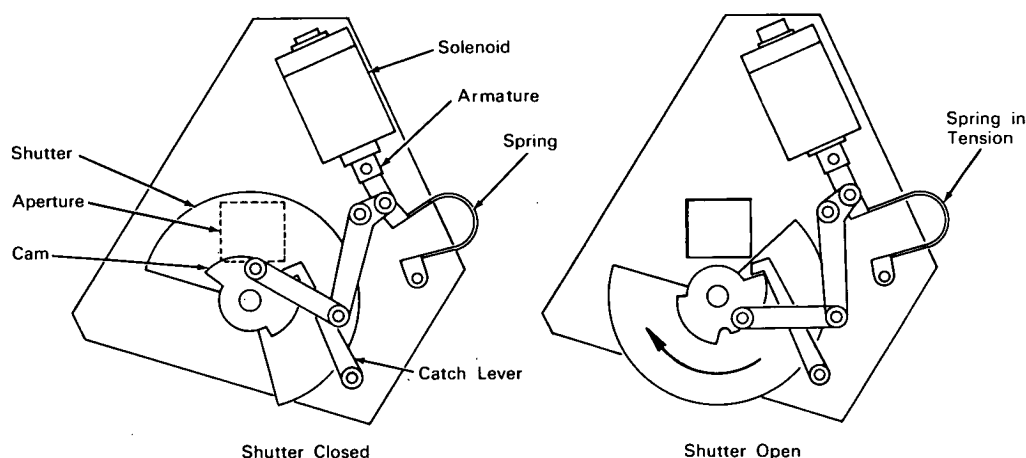


NASA TECH BRIEF



This NASA Tech Brief is issued by the Technology Utilization Division to acquaint industry with the technical content of an innovation derived from the NASA space program.

Electromechanically Operated Camera Shutter Provides Uniform Exposure



The problem: A camera shutter which sweeps across the aperture in one direction when opening and in the opposite direction when closing causes uneven exposure of the film (or vidicon tube in a TV camera). This becomes a more serious problem when the camera is in motion and the shutter moves either with or against the direction of motion. In order to minimize distortion of the image formed in the camera, shutters may be designed to cycle in a constant direction across the aperture during opening and closing. The problem was to design a unidirectional shutter which would be actuated by an electrical signal to open and stay opened until the signal was removed.

The solution: A shutter mechanism employing a solenoid and appropriate mechanical linkages.

How it's done: Schematic views of the shutter in the opened and closed conditions are shown in the illustration. When the solenoid is energized by an electrical signal, the armature, which is connected to the

shutter through the linkages shown, rotates the shutter clockwise to uncover the aperture and expose the film. When the solenoid is de-energized on removal of the signal voltage, the spring-actuated linkages rotate the shutter in a clockwise direction to cover the aperture.

Note:

An electronic timer can be incorporated in the mechanism to cycle the operation at any desired time intervals.

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